

Amendments to the Claims

The following listing of the claims will replace all prior versions, and listings of the claims in the application:

Listing of Claims

Claims 1-4 (canceled)

Claim 5 (new): A method for reading out positional information from an optical disk that comprises a track groove and on which positional information indicating a physical location on the track groove is represented by a wobble shape of the track groove,

wherein the optical disk includes a plurality of positional information units that are arranged on the track groove, and

wherein each said positional information unit includes:

a positional information section that represents the positional information by a combination of wobble patterns selected from multiple types of wobble patterns that have been defined so as to correspond to respective signal waveforms that rise and fall mutually differently;

a sync mark section having a wobble pattern in a shape distinguishable from the wobble patterns of the positional information section wherein the wobble patterns of each said positional information section are each defined by either a first displacement shape or a second displacement shape, the first displacement shape having been defined so as to correspond to a signal waveform that rises relatively steeply and falls relatively gently, the second displacement shape having been defined so as to correspond to a signal waveform that rises relatively gently and falls relatively steeply; and

a precision positioning mark section ahead of each said positional information section,

said method comprising the steps of:

detecting the sync mark section that has been formed on the optical disk;

detecting the precision positioning mark section;

establishing a bit synchronization for the positional information using the sync mark section detected and/or the precision positioning mark section detected; and

reading out the positional information in accordance with the bit synchronization established in the step of establishing the bit synchronization for the positional information.

Claim 6 (new): A method for writing data on an optical disk that comprises a track groove and on which positional information indicating a physical location on the track groove is represented by a wobble shape of the track groove,

wherein the optical disk includes a plurality of positional information units that are arranged on the track groove, and

wherein each said positional information unit includes:

a positional information section that represents the positional information by a combination of wobble patterns selected from multiple types of wobble patterns that have been defined so as to correspond to respective signal waveforms that rise and fall mutually differently;

a sync mark section having a wobble pattern in a shape distinguishable from the wobble patterns of the positional information section wherein the wobble patterns of each said positional information section are each defined by either a first displacement shape or a second displacement shape, the first displacement shape having been defined so as to correspond to a signal waveform that rises relatively steeply and falls relatively gently, the second displacement shape having been defined so as to correspond to a signal waveform that rises relatively gently and falls relatively steeply; and

a precision positioning mark section ahead of each said positional information section,

said method comprising the steps of:

detecting the sync mark section that has been formed on the optical disk;

detecting the precision positioning mark section based on the sync mark section detected;

performing positioning using the precision positioning mark section detected; and

starting to write the data based on a positioning result obtained in the positioning step.

Claim 7 (new): An optical disk drive for reading out positional information from an optical disk that comprises a track groove and on which positional information indicating a physical location on the track groove is represented by a wobble shape of the track groove,

wherein the optical disk includes a plurality of positional information units that are arranged on the track groove, and

wherein each said positional information unit includes:

a positional information section that represents the positional information by a combination of wobble patterns selected from multiple types of wobble patterns that have been defined so as to correspond to respective signal waveforms that rise and fall mutually differently;

a sync mark section having a wobble pattern in a shape distinguishable from the wobble patterns of the positional information section wherein the wobble patterns of each said positional information section are each defined by either a first displacement shape or a second displacement shape, the first displacement shape having been defined so as to correspond to a signal waveform that rises relatively steeply and falls relatively gently, the second displacement shape having been defined so as to correspond to a signal waveform that rises relatively gently and falls relatively steeply; and

a precision positioning mark section ahead of each said positional information section, wherein the precision positioning mark section comprises an identification mark for use in precision positioning,

the drive comprising:

means for detecting the sync mark section that has been formed on the optical disk;

means for generating a first detection window with a predetermined time width after a predetermined time has passed since a timing at which the sync mark section was detected by the sync mark section detecting means;

means for detecting the identification mark, which has been formed on the optical disk, by using the first detection window;

means for establishing a bit synchronization for the positional information, which is recorded on the optical disk, by reference to the timing at which the sync mark section has been detected and/or a timing at which the identification mark has been detected; and

means for reading out the positional information at a timing at which the bit synchronization has been established by the means for establishing the bit synchronization for the positional information.

Claim 8 (new): An optical disk drive for writing data on an optical disk drive for reading out positional information from an optical disk that comprises a track groove and on which positional information indicating a physical location on the track groove is represented by a wobble shape of the track groove,

wherein the optical disk includes a plurality of positional information units that are arranged on the track groove, and

wherein each said positional information unit includes:

a positional information section that represents the positional information by a combination of wobble patterns selected from multiple types of wobble patterns that have

been defined so as to correspond to respective signal waveforms that rise and fall mutually differently;

a sync mark section having a wobble pattern in a shape distinguishable from the wobble patterns of the positional information section wherein the wobble patterns of each said positional information section are each defined by either a first displacement shape or a second displacement shape, the first displacement shape having been defined so as to correspond to a signal waveform that rises relatively steeply and falls relatively gently, the second displacement shape having been defined so as to correspond to a signal waveform that rises relatively gently and falls relatively steeply; and

a precision positioning mark section ahead of each said positional information section, wherein the precision positioning mark section comprises an identification mark for use in precision positioning,

the drive comprising:

means for detecting the sync mark section that has been formed on the optical disk;

means for generating a first detection window with a predetermined time width after a predetermined time has passed since a timing at which the sync mark section was detected by the sync mark section detecting means;

means for detecting the identification mark, which has been formed on the optical disk, by using the first detection window; and

data writing means for setting a data writing start point or end point by reference to a timing at which the identification mark has been detected.